

with this subject. But there is a great deal of valuable matter gathered here bearing on its properties, and it may very usefully be consulted.

(4) The somewhat inclusive title of the fourth volume under review covers a course of lectures on elementary physics and chemistry. Few alterations have been made from the earlier editions. A lecture has been added on liquid air. The book has found many friends, as we might have expected, and we have no doubt it will find many more.

(5) In this second edition of Dr. Mie's book a short section on radio-active bodies has been added. When it is stated that this occupies part only of a single page, it will be clear that it is not a detailed account. It is concerned only with the question of the composite nature of an atom and the transmutation of the elements. A few emendations have been made in the text to increase the lucidity.

(6) A short lecture on the relation of physics to other sciences, in the light of modern work on physical chemistry and recent discoveries of the non-valent gases and of radio-activity. While admitting the necessity of specialisation, it is urged that a broad outlook should be encouraged.

#### OUR BOOK SHELF.

*Refrigeration: an Elementary Text-book.* By J. Wemyss Anderson. Pp. ix+242. (London: Longmans, Green and Co., 1908.) Price 7s. 6d. net.

THE increasing use of refrigerating processes in the distribution and preservation of food, and also in many important industries, has already called for a special type of engineer who must possess a knowledge, not only of machines and mechanism, but also of the theoretical properties of heat. Nowadays, when the market for electrical engineers is becoming uncomfortably crowded, young men would do well to consider the prospects open to them as refrigerating engineers. To those who wish to enter this profession Mr. Anderson's book will be most welcome as an introduction to the fundamental principles on which modern refrigerating processes depend.

The treatment of the subject is accurate and lucid, and in all cases the necessary mathematical investigations are reduced to their simplest elements, many numerical examples being added. The first three chapters are devoted to a brief *résumé* of the elementary properties of heat, including radiation, conduction, and convection. In chapters iv. and v. the elastic and thermal properties of fluids are dealt with. A simple explanation of the first and second laws of thermodynamics is given in chapter vi. The remaining six chapters are of a more practical character, special attention being paid to the solution of problems which arise in connection with refrigerating processes. Cold-air machines, vapour machines, compression machines and absorption plants are described in chapter vii. The liquefaction of air is considered in chapter viii., and ice-making in chapter ix.

A very important branch of the subject is dealt with in chapter x., where the methods of insulating and cooling large chambers are described and illustrated. Miscellaneous uses of refrigeration are considered in chapters xi. and xii.; in order to appreciate the extent to which refrigerating processes are used industrially, it is only necessary to glance through the contents of these chapters. Ice-making is in demand for general purposes, and for skating rinks and curling ponds.

General cooling is used for keeping meat and other food-stuffs, and for increasing the yield of butter from milk. Special cooling arrangements are required for keeping ammunition (such as cordite) in a proper condition. The growth of plants and shrubs is checked, and unripe fruit is kept so that it can ripen according to the market, by the aid of suitable methods of cooling.

In general engineering, refrigerating processes are used for drying the air supplied to blast furnaces, and for hardening sandy or boggy soils in order that tunnels may be made or shafts sunk. Cooling processes are also largely used in the brewing industry. Mr. Anderson does not profess to treat of these applications of refrigeration in detail, and the design of refrigerating machines is not dealt with; but the student commencing the study of the subject cannot do better than master the contents of Mr. Anderson's book, after which he will be in a position to understand the nature of the problems which confront a refrigerating engineer, and upon the solution of which his success will depend.

E. EDSER.

*Ceylon. A Handbook for the Resident and the Traveller.* By Dr. J. C. Willis, Colombo Apothecaries' Company. Pp. x+247+iv. (London: Dulau and Co., 1907.) Price 5s. net.

THE Director of the Royal Botanic Gardens of Ceylon explains that he is the author of this handbook by default. He was of opinion that a handbook was needed, and having failed to persuade one better qualified than himself to become the author, Dr. Willis undertook to write the book himself. He gravely informs us in the preface that the idea was to write a comprehensive work of about 1000 pages, and that having devoted eight months of his leisure to writing the agricultural section he found that this alone would take 125 pages of the present book in print, whilst on the same scale the entire volume would take him ten years to complete. The chapter on agriculture was therefore reserved as the basis of a separate volume on tropical agriculture, and the present book of 244 pages was written with the assistance of many friends and authorities in the island.

The book includes a brief account of the natural features of Ceylon, of its history and peoples, with descriptions of roads, railways, towns and villages, and of the principal industries, with chapters on sports and games. It contains two small sketch-maps of Ceylon, and is illustrated with numerous photographs, many of which are excellent. As a whole the book is disappointing. It can, of course, lay no claim to comparison with Emerson Tennent's famous work, and the author's style is crude and has none of the charm of Sir Samuel Baker's. A great deal of information, solid and trivial, is conveyed in a terse but loose grammatical style of which the following sentences are examples:—"The Museum is closed for cleaning on Fridays and admission is always free." "Water is usually pretty bad in the low country and should always be filtered before use, though if used for tea-making unfiltered the boiling will have about killed all germs."

"The native who has lost his taste for his own art is in regard to whatever style of art he adopts among the most inartistic people on the face of the earth, as one glance into any native house furnished in European style will show. Many are in the worst style of early Victorian, whereas a native house furnished in the old native manner is a pleasing sight."

As the work of a man of science the book is distinctly disappointing, and is little, if any, improvement on the Ceylon handbook to the St. Louis Exhibition, on which the author has largely drawn. The

section on agriculture is one of the best in the book, but even here there are many signs of the effort which has been exerted in writing short popular descriptions.

It is to be feared that the book will fall between two stools. It is too dry and unattractive for the ordinary traveller, whilst the serious student will not find it satisfactory.

Dr. Willis would have been better advised had he devoted himself to preparing a more serious work, or, if time did not permit of this, to producing a new edition of Sir Emerson Tennent's standard treatise. The present work is not likely to add to his reputation.

*The Royal Gardens, Kew.* From photographs taken by permission. By E. J. Wallis, with descriptive notes by H. Spooner. Pp. 64. (London: E. J. Wallis, 42 Gloucester Road, Kew Gardens, n.d.) Price 1s. net.

It is difficult to realise that the modern development of Kew Gardens as a public institution only dates back to the middle of the last century, when Sir William Hooker initiated the extensions and improvements that have been continued by his successors in office. Increased travelling facilities in recent years have largely augmented the number of visitors to Kew, and consequently there is certain to be a large demand for a popular account of the gardens that will serve as a memento of what must often be memorable visits. The illustrations provided by Mr. Wallis depict exteriors and general views, selected spots in various houses, and a few specimen plants. The photographs of the tropical water-lilies and of the Yulan, *Magnolia conspicua*, are especially pleasing, also of the delicate flowers *Cypripedium glaucophyllum* and *Peristeria elata*. Mr. H. Spooner has contributed the text, in which strangers will find a useful guide round the houses and to the choice specimens, as well as brief descriptions of the more regular and conspicuous tenants.

#### LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

##### The Ciliated "Urns" of the Sipunculids.

In the winter of 1871-2 I studied the richly corpusculated perivisceral fluid of *Sipunculus nudus* at Naples. I was with Anton Dohrn, who was making arrangements for the building of his celebrated laboratory. That remarkable marine zoologist Krohn, who in 1851 had described the ciliated "urns" (Töpfchen) of the body-fluid of *Sipunculus* as parasites, was there, and spent an evening with us. I described the ciliated urns briefly in the *Annals and Mag. of Nat. Hist.*, vol. xi. (fourth series), 1873, p. 89, and pointed out their mode of origin. I say, "Further, I have found out the source of the 'Töpfchen.' They are to be observed in great numbers attached within the curious pair of tubes or vessels formed by duplicatures of the peritoneal membrane, which lie on each side of the oesophagus." I then give a wood-cut figure of the attached "urns" with long stalks, and state that "they develop as buttons on the cellular surface," and that "they become detached and swim off into the fluid."

This statement was erroneously quoted nearly thirty years after its publication, in the first instance by Cuenot, who said that I stated that the urns were developed on the outside of the oesophageal tubes, whereas I had italicised my statement as above to the effect that they are developed on the *inside* of those tubes.

The matter is not one of great importance, but it is not agreeable to see a statement repeated to the effect that one said just the opposite of what one did say. This repetition of an error is made by Dr. Selensky, of St.

Petersburg, in the *Zeitschr. f. wiss. Zoologie*, Bd. xc., p. 558. He apparently has not consulted my paper, but, although he does not say so, has taken his information from Cuenot, to whom, erroneously, he attributes the first correct observation as to the place and mode of origin of the ciliated urns of the Sipunculids, an observation published by me now thirty-five years ago. I wish clearly to state that I am quite sure that neither Prof. Cuenot nor Dr. Selensky had any notion that they were not quoting me correctly. I should have let the matter pass altogether had there not been lately an attempt to revive the notion that these curious freely swimming corpuscles with their crown of cilia are parasites. I disposed of that hypothesis when I observed in 1871-2, and figured in 1873, their mode of growth.

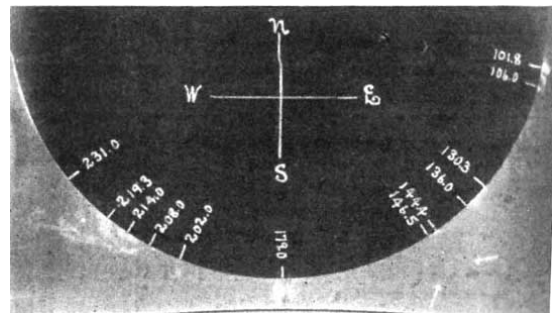
E. RAY LANKESTER.

29 Thurloe Place, S.W., July 30.

##### Prominence and Coronal Structure.

COMMUNICATIONS by Dr. Lockyer and by Mr. Buss have appeared in recent numbers of NATURE (April 2, June 18, and June 25) under the above heading. In the last-mentioned number Dr. Lockyer quotes a portion of a letter which I wrote to him following the publication of his original paper, showing the triple-arch prominence. I examined my plates under very unfavourable illumination, and wrote that no prominence of unusual form was discernible in the position which he gave. More careful examination shows a faint, detached, V-shaped cloud attaining an elevation of 67,000 miles, as probably the last remnant of the prominence, at considerable elevation. The accompanying figure will show this faint cloud at 146°5.

I regret that Dr. Lockyer did not quote my letter further, for I wrote that I had so often seen a promin-



ence, risen to considerable height, topple back into the sun, thus making an arch, that it seemed unwarrantable to assume another explanation for their formation without positive knowledge that the earlier stages of development were contrary to this usual performance. Fortunately, Mr. Buss had earlier observations of this prominence, and these showed the arches to have had the usual origin.

Concerning the prominence in the south-western quadrant, Fig. 2 of Dr. Lockyer's letter, for which he suggests the possibility of false orientation on my print, the present figure shows that the orientation was correct. The part of the prominence corresponding to the prominence at 218° shown on the negatives of Dr. Lockyer and of Prof. Hale is easily recognised at 219°3. The long arm springing for position-angle 208° is apparently a new development.

PHILIP FOX.

Yerkes Observatory, July 18.

##### Fossil Aphididae from Florissant, Colorado.

THE plant-lice of the Miocene shales at Florissant, Colorado, have been described at length by Scudder in his great work on Tertiary insects (1890). He was able to recognise no fewer than fifteen genera and thirty species. All the genera were considered to be extinct, and although they included both Aphidinae and Schizoneurinae, they were found to differ from the modern representatives of these subfamilies in an important character running throughout the series—the length and slenderness of the marginal or stigmatic cell. In this they also differ from